IN THE SPECIFICATION

Please replace the paragraph beginning at page 1, line 12, with the following rewritten paragraph:

The invention relates to a spark gap arrangement for use in power supply systems, in particular in low-voltage systems, comprising an arcing chamber within which an electric arc is formed between two electrodes ~~(precharacterizing clause of claim 1)~~.

Please replace the paragraph beginning at page 1, line 17, and ending on page 2, line 22, with the following rewritten paragraph:

In efficient lightning guards capable of limiting secondary currents, such as are employed in low-voltage networks to protect against the influences of lightning flashes, the hot, ionized gases produced by the electric arc during the process of diverting the flash current are expelled with relatively high pressure, in the form of a pressure wave, through specific outlet or exhaust openings. The result is that the extreme pressure and temperature stresses generated at he spark gap by the diversion process and the associated high energy conversion are reduced sufficiently that such guards can be enclosed in small, inexpensive housing. Such spark gap arrangements are disclosed, for example, in the patent DE 196 19 334 A1 and are contained in the older, but not previously published German patent application 197 17 802. In spark gap arrangements of this kind, however, there is a danger that the expelled ionized and hence conductive gases will ignite uncontrolled interfering arcs in the immediately surrounding electric field, which can seriously reduce the ~~us~~ ability of the system. To exclude this possibility, the manufacturers of such guards specify a safety distance relative to the guard, defining a space within which no other electrical equipment may be situated. This presents the disadvantage that the often favorable, small dimensions of the guard itself do no in practice result in a saving of space. It should also be noted that the

explosively expanding pressure wave that accompanies the current-diversion process must be borne by the entire surroundings of the installation (e.g., distributor ~~housing~~ housing). This requirement in particular makes it necessary to select a housing for the installation according to these criteria, and its effectiveness can be demonstrated only by tests simulating lightning flashes in a surge-current laboratory. Therefore, he lightning-guard manufacturers recommend installation housings demonstrated by tests to be suitable for this purpose, which the planner/installer must use. This considerably restricts the possibilities available for a project and involves additional testing costs. Furthermore, there are several kinds of application in which the security measures mentioned above cannot be implement (e.g., explosion protection). It is also possible that people who are too close to the exhaust opening will be endangered by the hot, ionized gases expelled from it. Devices of this kind then cannot be utilized despite the requirements for protection.

Please replace the paragraph beginning at page 3, line 1, with the following rewritten paragraph:

In contrast, the problem area and objective toward which the invention is directed ~~is~~ to construct a spark gap arrangement ~~according to the precharacterizing clause of Claim 1~~ in such a way that the gases emerging from it do not bring about the disadvantages explained with reference to the state of the art, whereas on the other hand the disadvantages of the known fully encapsulated constructions of spark gap arrangements, which have no openings to the exterior (e.g., according to DE 195 06 057 A1) are avoided.

Please replace the paragraph beginning at page 3, line 10, with the following rewritten paragraph:

To achieve this objective and solve the problem, ~~proceeding from the precharacterizing clause of Claim 1 and~~ in accordance with ~~its~~ characteristics of the invention, it is first provided that downstream of the arcing chamber is disposed an intermediate (storage) chamber, the volume of which is considerably greater than the volume of the arcing chamber, and that the arcing and intermediate chambers are connected to one another by a pressure-resistant, preferably metallic flow channel. The intermediate chamber receives the hot gases and decomposition products produced in the arcing chamber and stores them for some time, during which the pressure wave is reduced and cooling occurs. Thereafter, the cooled and quiescent gas can either remain in the storage chamber or be released into the surroundings.

Please replace the paragraph beginning at page 3, line 24, and ending on page 4, line 2, with the following rewritten paragraph:

The released gases are thus approximately compatible with environmental conditions, so that there is no need for safety distances, special installation housing and other ~~meaures~~ measures prescribed in the state of the art. This mode of action derives in particular from the fact that the volume of the intermediate chamber is considerably larger than that of the arcing chamber, so that when the gases are transferred into the intermediate chamber, their pressure is substantially decreased. The temperature of these gases is simultaneously lowered in the intermediate chamber. Furthermore, this effect is enhanced by the above-mentioned flow channel, which because of its smaller cross section delays passage of the hot gases from the arcing chamber into the intermediate chamber.

Please replace the paragraph beginning at page 4, line 3, with the following rewritten paragraph:

The preferred embodiment of the invention ~~according to Claim 2~~ is concerned with a spark gap arrangement ~~according to Claim 1~~ as described with at least one outlet for the hot, pressurized gases formed by the arc and is characterized by the provision of one or more outlet openings or channels for the gases in the intermediate chamber. This measure facilitates the cooling of the ionized gases and degeneration of the pressure wave described above, so that the gases can leave the intermediate chamber in a directed manner, through the above-mentioned outlet openings, and harmlessly enter the surroundings.

Please replace the paragraph beginning at page 4, line 13, with the following rewritten paragraph:

~~Claim 3 states~~ Another characteristic of the present invention is the discovery of a preferred ratio of the volume of the arcing chamber to the volume of the intermediate chamber.

Please replace the paragraph beginning at page 4, line 15, with the following rewritten paragraph:

~~Subordinate Claims 4 to 7~~ Other features of the invention relate to possible means of enhancing the capacity of the intermediate chamber to conduct heat away and hence exert a cooling action, to which a cooling by vaporization is added if plastics that emit quenching gas are present. At the same time, because of the cooling achieved, the electrical conductivity of the emerging gases is reduced. This too is (see the above descriptions of the state of the art) an advantage.

Please replace the paragraph beginning at page 4, line 23, and ending on page 5, line 20, with the following rewritten paragraph:

The invention further makes it possible, by appropriate modification of certain measures, to optimize pressure and mass flow rate and temperature of the emerging gases, or to match these parameters to the requirements of the particular application. For this purpose, the possibility of influencing the mass flow rate m is important; this quantity is determined by the ratio of the inflow cross section of the gases entering the intermediate chamber (and hence the inflowing amount of gas) to the outflow cross section during emergence from the intermediate chamber (and hence the outflowing amount of gas). Hence if the intermediate chamber is designed to have an appropriate volume, the pressure wave of the emerging gases can also be influenced with respect to its amplitude and rate of rise. For example, if the outflow cross section of the gases emerging from the intermediate chamber is very much smaller than the inflow cross section of the gases entering the intermediate chamber, the gases will spend a longer time within the intermediate chamber. They will be cooled by a correspondingly greater amount and not be released into the surroundings until this longer retention time has elapsed. Because of this "retention effect" the enforced cooling within the intermediate chamber explained above is achieved, and it can be still further enhanced by additional heat-eliminating means ~~(see Claims 4 to 6)~~. In this regard care should always be taken that the volume of the high-pressure region (arcing chamber and flow channel) is considerably smaller than the volume of the low-pressure region (intermediate chamber and outlets). According to the description of the above-mentioned measures and the adjustment of the mass flow rate, during the process of extinguishing secondary currents, the exhaust behavior of this spark gap arrangement can be controlled.

Please replace the paragraph beginning at page 5, line 21, and ending on page 6, line 14, with the following rewritten paragraph:

In practice when the supply-system secondary current (short-circuit current) is interrupted, quasi-stationary flow conditions will become established within milliseconds. The intermediate chamber has only a slight influence on these flow conditions. In the case of secondary-current-limiting spark gaps, with their lower passage integral and hence low power-conversion rate, it is possible to store in the intermediate chamber the entire amount of gas produced in the arcing chamber. If a sufficient pressure difference is achieved between the high-pressure part and the low-pressure part, the desired gas flow does not become interrupted here, so that with such types of devices there is no need for outlet openings. During the processes associated with the diversion of lightning flashes (surge currents), which occur in the microsecond range, the size of the intermediate chamber is of crucial significance, because in this situation it is not possible to break down a quasi-stationary flow. In such cases the action of the invention explained above comes into play. Then the intermediate chamber must be so dimensioned with respect to its volume that it can retain the entire amount of gas explosively produced in the arcing chamber ~~(see Claim 12)~~. In this regard it is essential for the cross section of the inlet through which gas enters the intermediate chamber to be of such small dimensions that a kind of "nozzle congestion" occurs and the gas flow is almost completely interrupted. As a result the cooling action and hence also the energy conversion in the arc are reduced, so that relatively little pressure is developed. As a result it is possible, at least in the case of relatively small lightning currents, to do without the outlet openings in this case as well.